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International Preliminary Examination Report
(PCT/IPEA/409) Box No.5

2. Cited References and Explanation

Cited reference 1: JP 2002-371694A (Komatsu Ltd.),
December 26, 2002, Paragraph [0019]-[0020], Fig 9
& US 2003-075995 A

Cited reference 2: JP 6-257189 A (Hitachi Construction
Machinery Co., Ltd.),
September 13, 1994, Paragraph [0009]-[0012], [0017]
Fig.2, Fig.4, Family: none

Cited reference 3: JP 9-151491 A (Tokai Rika Co., Ltd.),
June 10, 1997, Paragraph [0011] Fig.1, Family: none

Cited reference 4: JP 2002-201676 A (Komatsu Ltd.),
July 19, 2002, Paragraph [0010]-[0011] Fig. 2
Family: none

Cited reference 5: JP 2002- 294765 A (Kubota Corp.),
October 9, 2002, Paragraph [0036]-[0045] Fig. 9-12
Family: none

The inventions as claimed in claims 1, 2, 3 and 5
involve novelty and inventive step over any one of the

Cited Documents 1 to 5 which were cited in the International Search Report. All the Cited Documents 1 to 5 are silent on such feature of the present invention that "when a monitor section is in a measurement value display mode, the monitor section displays an image data indicative of an alarm and an alarm section displays a predetermined alarm pattern by means of blinking or sound, whereas when the monitor section is in a camera display mode, the monitor section keeps a camera display mode and the alarm section displays an alarm pattern by means of blinking or sound which is different from that of the alarm pattern displayed in the measurement value display mode". This point should be considered as not being readily conceivable by one skilled in the art in this field of endeavor.

[0005]

To solve the above problem, the present invention provides an indicator control system for a construction machine, including an indicator for switching, by a switching means, from a measurement value display mode for showing measurement data of an object to be monitored of the construction machine to a camera display mode of a camera section mounted on the construction machine and vice versa and for displaying a selected mode on a monitor section; an alarm section for generating an alarm, which is provided at a place different from the monitor section on the indicator; an alarm judging means for judging whether or not the measurement data of the object to be monitored corresponds to a predetermined alarm standard; and an alarm control means for activating the alarm section to generate an alarm regardless of the display mode shown on the monitor section when the alarm judging means judges that the alarm is necessary.

Also, the configuration may be such that the indicator be constructed so that the alarm section is provided at an upper part of a housing, the liquid crystal monitor section is formed in a center of the housing, and a control panel section is provided in a lower part of the housing, and the monitor section consist of a liquid crystal screen, and include a gage image display section for showing a

measurement value of the object to be monitored, a character display section for showing numerical values and the like, and an event display section for showing alarm contents and various pieces of equipment information.

The alarm control means preferably has an alarm judging means for judging whether or not image data sent from the camera section corresponds to a predetermined alarm standard.

The configuration may be such that an alarm pattern corresponding to the display mode of the monitor section is determined in advance, and when the alarm judging means judges that an alarm is necessary, the alarm control means selects the alarm pattern corresponding to the display mode shown on the monitor section to activate the alarm section.

Also, the alarm section may consist of an alarm lamp formed by a light source such as an LED provided on the housing of indicator.

Amended document (Article 34)

[0021]

[Alarm judging means]

The alarm judging means 11 converts the detection data from the sensor group S, S, S . . . into a measurement value. Alternatively, in the case where the measurement value can be obtained directly from the sensor, the alarm judging means 11 receives the measurement value as it is, and compares it with preset alarm standard data, thereby judging whether or not an alarm is necessary.

The measurement value subjected to the judgement is converted into the gage image shown on the monitor section 2 or the alarm image by the image processing means 12, or an event display, described later, shown on the event section 2b is called out and is shown as the image data.

[0033]

Also, in the above-described example, the configuration in which whether or not the alarm is necessary is not judged from the data of the camera section C is exemplarily shown. However, the configuration may be such that whether or not the alarm is necessary is judged based on the data of the camera section C.

The configuration may be such that, for example, during the work, the camera section C is allowed to be activated always or during predetermined work, and when an obstacle is detected in a predetermined monitoring area displayed on the camera section C, whether or not the alarm is necessary is judged by a camera alarm judging means 11', and an alarm is generated in the same way.

CLAIMS

1. (amended) An indicator control system for a construction machine, comprising:

an indicator for selectively switching, by an input switching means, from a measurement value display mode for showing measurement data of an object to be monitored of the construction machine to a camera display mode of a camera section mounted on the construction machine and vice versa and for displaying a selected mode on a monitor section;

an alarm section for generating an alarm, which is provided at a place different from the monitor section on the indicator;

an alarm judging means for judging whether or not measurement data of the object to be monitored corresponds to a predetermined alarm standard; and

an alarm control means for generating an alarm, in response to the display mode selected by the input switching means, activating the alarm section when the alarm judging means judges that the alarm is necessary;

wherein the alarm control means preliminarily sets, for the object to be monitored which it is judged an alarm is necessary for, different alarm patterns between the measurement value display mode and the camera display mode;

wherein the monitor section displays an image data

indicative of an alarm and the alarm section displays a predetermined alarm pattern by means of blinking or sound when the monitor section is in the measurement value display mode; and

wherein the monitor section keeps a camera display mode and the alarm section displays an alarm pattern by means of blinking or sound which is different from that of the alarm pattern displayed in the measurement value display mode when the monitor section is in the camera display mode.

2. The indicator control system for a construction machine according to claim 1, characterized in that the indicator is constructed so that the alarm section is provided at an upper part of a housing, the liquid crystal monitor section is formed in a center of the housing, and a control panel section is provided in a lower part of the housing, and

the monitor section consists of a liquid crystal screen, and includes a gage image display section for showing a measurement value of the object to be monitored, a character display section for showing numerical values and the like, and an event display section for showing alarm contents and various pieces of equipment information.

3. The indicator control system for a construction machine according to claim 1 or 2, characterized in that the alarm control means has an alarm judging means for judging whether or not image data sent from the camera

section corresponds to a predetermined alarm standard.

4.

5. The indicator control system for a construction machine according to claim 1, characterized in that the alarm section consists of an alarm lamp formed by a light source such as an LED provided on the housing of indicator.

Fig.2

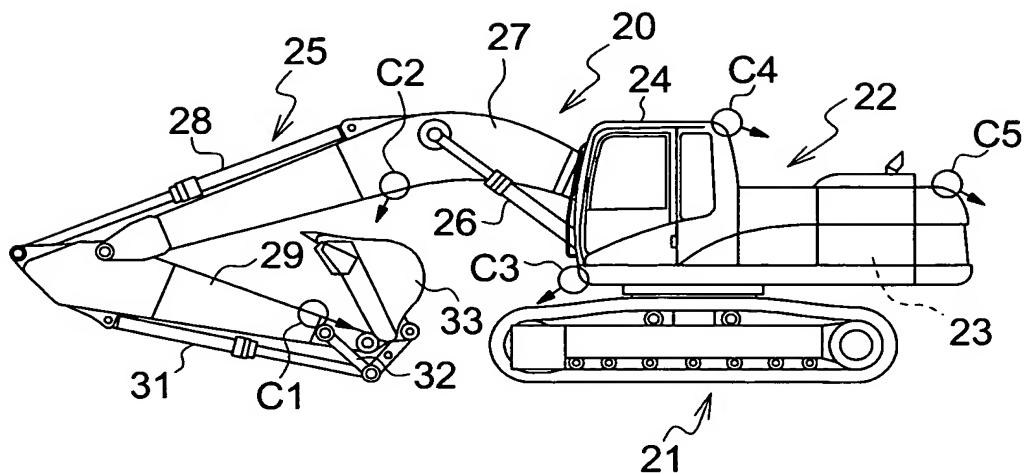


Fig.3

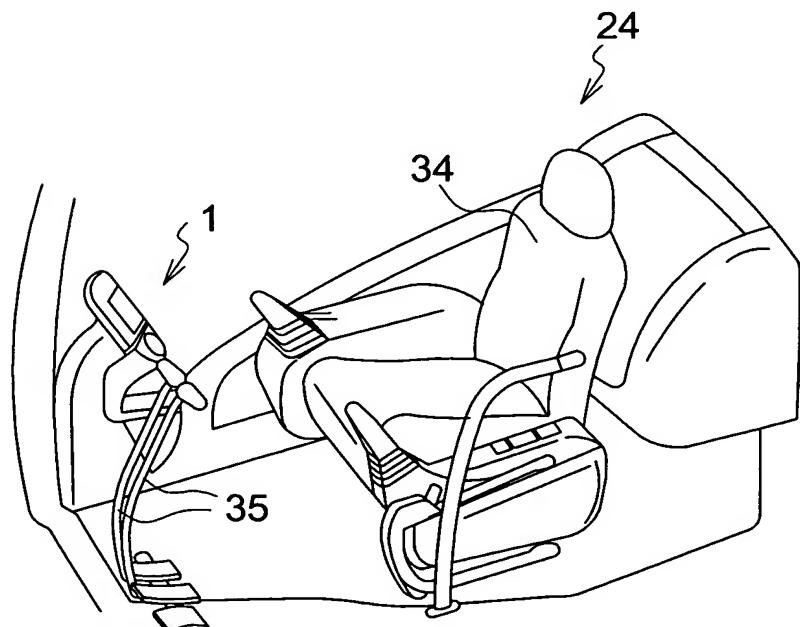


Fig.4

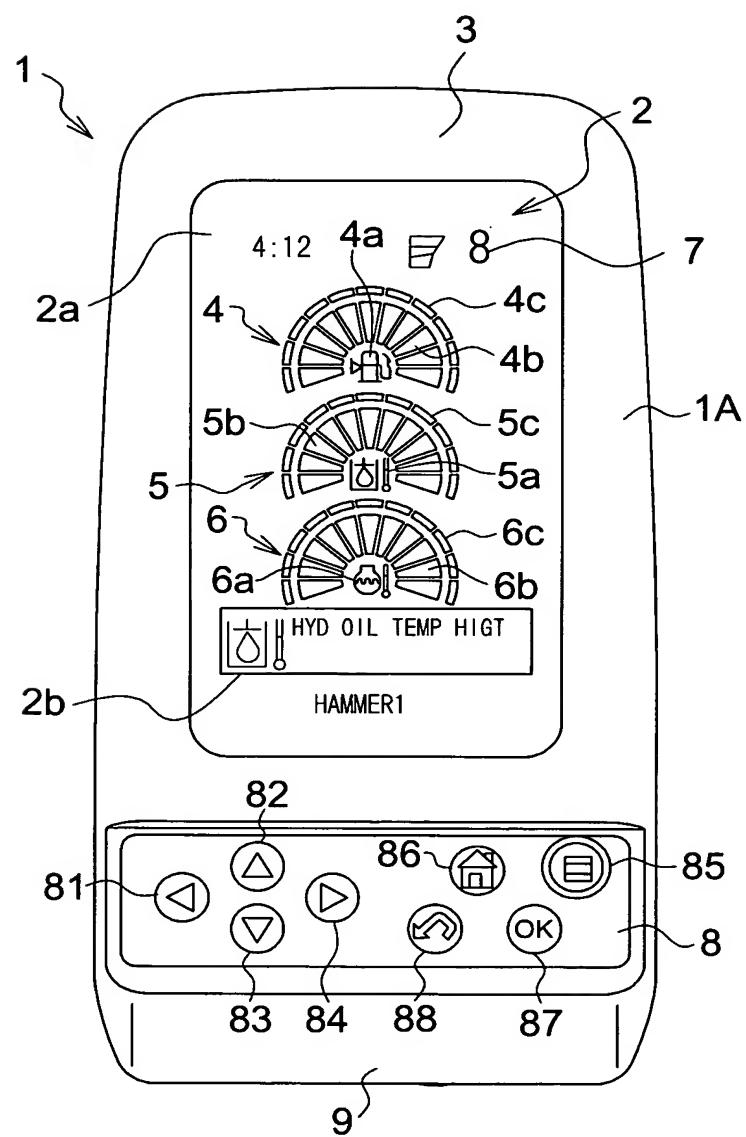


Fig.5

